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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,322	06/26/2003	Russell K. Myers	LEE 2 13424	3113

7590 06/29/2005

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EXAMINER

SHAW, CLIFFORD C

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/603,322

Applicant(s)

MYERS ET AL.

Examiner

Clifford C. Shaw

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--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-140 is/are pending in the application.
- 4a) Of the above claim(s) 55-63 and 113-138 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 139 and 140 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 21-24, 26, 27, 30, 31, 34-36, 39-44, 46-49, 53, 64-66, 75-85, 91-96, and 98-112 is/are rejected.
- 7) ☒ Claim(s) 3-20, 25, 28, 29, 32, 33, 37, 38, 45, 50-52, 54, 67-74, 86-90 and 97 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0623, 0124.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

Detailed Action

1.) In his response filed on 4/25/2005, applicant elects, without traverse, the species of figure 1 for further prosecution. Applicant lists claims 1, 2, 21-36, 40-43, 46-48, 50-54, 64-85, 91-96, 98-100, and 101-112 as reading on the elected species. In the original election requirement, Examiner listed claims 64-79 as being generic to all the species. Upon reconsideration, claims 67-74 are not deemed to be generic, but instead are directed to the embodiment of figure 15. The claims directed to the figure 15 embodiment will be examined along with the elected species, since both are directed to power supply control based on sensed RMS current. Accordingly, claims 1-54, 64-112, 139, and 140 are examined in the instant Office action with claims 64-66 and 75-79 considered as generic. Claims 55-63 and 113-138 are withdrawn from consideration as being directed to non-elected species.

2.) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3.) Claims 1, 2, 21-24, 26, 27, 30, 31, 34-36, 39-44, 46-49, 53, 64-66, 75-85, 91-96, and 98-112 rejected under 35 U.S.C. 103(a) as being unpatentable over Blankenship (5,278,390, cited by applicant) taken with Kiyohara et al. (4,125,759) further taken with the Joseph et al. article ("Electrical Measurements and Heat Input Calculations for the GMAW-P Process", cited

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by applicant). Figure 8 and the discussion thereof in the patent to Blankenship (5,278,390) disclose an electric arc welder for performing a given weld process with selected waveforms including digital controllers and control based on a digital representation of welding current sensed at 44 and converted to a digital format by element 180. The claims differ from the arrangement of Blankenship (5,278,390) in calling for a particular control algorithm based on the root mean square (RMS) of the welding current. This difference does not patentably distinguish over the prior art. At the time applicant's invention was made, it would have been obvious to have implemented any conventional weld process on the system of Blankenship (5,278,390). In particular, it would have been obvious to have implemented a weld process based on controlling the welding waveform on the basis of an RMS value of sensed current, the motivation being the teachings of Kiyohara et al. (4,125,759) that such is advantageous for controlling a particular type of welding process (see the discussion at columns 9 and 10 and in claim 1 of Kiyohara et al. (4,125,759) wherein a short circuit arc welding process is controlled on the basis of sensing the RMS value of the current during the arcing phase of the process). It would require only routine skill in the art to incorporate the analog based teachings of Kiyohara et al. (4,125,759) into the digital system of Blankenship (5,278,390). In incorporating these analog teachings into Blankenship (5,278,390), it would have been obvious to have used any convenient algorithm for computing RMS. In particular, it would have been obvious to have used the algorithm taught by the Joseph et al. article, thereby satisfying the claims (see table 1 of the Joseph et al. article wherein applicant's RMS algorithm as set forth in his claims is presented as a formula). In regard to the claimed operational frequencies of the power supply and the claimed sampling frequencies for the sensed current, the same are considered representative of routine and

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therefore obvious engineering considerations based on the characteristics of the welding waveform desired to be reproduced in the system of the combination. In regard to the claims calling for an event signal at a particular location on the waveform, applicant is to note that the system of Kiyohara et al. (4,125,759) requires an event signal based on the presence or absence of an arc in order to trigger the determination of the RMS signal (this signal is the root mean square of the current over the entire arcing interval). In transferring the analog teachings of Kiyohara et al. (4,125,759) to the digital system of Blankenship (5,278,390), it is considered obvious that an event signal as claimed must be present because the teachings of Kiyohara et al. (4,125,759) require the root mean square is computed over the arcing interval.

4.) Claims 3-20, 25, 28, 29, 32, 33, 37, 38, 45, 50, 51, 52, 54, 67-74, 86-90, and 97 are objected to for depending from rejected claims, but would be given favorable consideration if recast in independent form to include all of the limitations of the parent claims. None of the prior art of record teaches or suggests the use of two registers in the manner set forth in claims 25 and 28; claims 29, 32, 33, 50-52, and 54 would be given favorable consideration at least because they depend from claims 25 and 28. None of the prior art of record teaches or suggests the limitations directed to control based both on RMS current and average current as set forth in claims 3 and 67; claims 4-20, 37, 38, 45, 68-74, 86-90, and 97 would be given favorable consideration at least because they depend from claims 3 and 67.

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5.) Claims 139 and 140 are allowable over the prior art of record. None of the prior art of record teaches or suggests an electric arc welder with the features claimed, particularly the limitations directed to a controller responsive to both RMS current and average current.

6.) The patent to Davis et al. (4,821,202) is cited to show a prior art computer controlled arc welding power supply that is controlled on the basis of an RMS value of sensed arc current (see column 32, line 65 through column 33, line 4 for a discussion of RMS based control).

Any inquiry concerning this communication should be directed to Clifford C Shaw at telephone number 571-272-1182. The examiner can normally be reached on Monday through Friday of the first week of the pay period and on Tuesday through Friday of the second week of the pay period.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas G. Dunn, can be reached at 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Clifford C Shaw
Primary Examiner
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June 27, 2005